

What is claimed is:

1. An automatic surveying system comprising:  
a telescopic optical system;

an image pickup device for picking up an image  
5 of a graduated face of a level rod, to which the  
telescopic optical system is to be collimated, and  
converting said image into image data;

a memory which stores therein recognition data  
of at least one of a pattern, numbers, and scale  
10 calibrations, provided on the graduated face of the  
level rod; and

an analyzing device for analyzing and  
recognizing the picked-up image of said at least one  
of the pattern, numbers, and scale calibrations of the  
15 level rod, based on the image data of the level rod  
picked up by the image pickup device and the  
recognition data of said pattern, numbers, and scale  
calibrations, read from the memory, to obtain a  
measurement.

20 2. An automatic surveying system according to  
claim 1, comprising:

a selection device for selecting recognition  
data corresponding to a level rod selected from  
different kinds of level rods, wherein said analyzing  
25 device reads said recognition data, corresponding to

the selected level rod, selected by the selection device from the memory.

3. An automatic surveying system, according to claim 1, further comprising an indication device for  
5 indicating said measurement obtained by the analyzing device.

4. An automatic surveying system according to claim 1, wherein said analyzing device determines the amount of image data of said level rod in the image  
10 width direction based on the image data of the level rod, and performs the analysis based on the amount of the image data thus obtained.

5. An automatic surveying system according to claim 1, wherein said analyzing device determines the amount of image data of said at least one of the pattern,  
15 numbers, and the scale calibrations in one of the image width direction and the image height direction, based on the image data of the level rod, and performs the analysis based on the amount of the image data thus  
20 obtained.

6. An automatic surveying system according to claim 3, wherein said analyzing device recognizes the values of the pattern, numbers, and the scale calibrations which coincide with a predetermined  
25 reference line within the field of view of the

telescopic optical system.

7. An automatic surveying system according to claim 6, wherein the telescopic optical system comprises an auto-level collimating telescope, said  
5 auto-level collimating telescope including an objective optical system; a focusing optical system; a compensating/erecting optical system, a focusing plate, and an eyepiece optical system, in that order from the object side; and a beam splitter which is  
10 provided between the compensating/erecting optical system and the focusing plate to split object image carrying light into one light bundle which is incident upon the eyepiece optical system and another light bundle which is incident upon the image pickup device.

8. An automatic surveying system according to  
15 claim 7, wherein said memory device stores therein in advance coordinates on a light receiving surface of an image pickup element on which a horizontal line and a stadia line of the focusing plate are to be formed,  
20 so that one of the coordinates of the graduated face of said level rod coincidental with each line and the distance between the lines on the graduated face can be analyzed based on the stored coordinates and the coordinates of the image picked-up by the image pickup  
25 device, on the light receiving surface of the image

pickup element.

9. An automatic surveying system according to claim 1, wherein said memory device can store said measurement obtained by the analyzing device.

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